

EXHIBIT 4

**PROTOCOL FOR THE STUDY OF
HEARING AID INTERACTION WITH
WIRELESS PHONES**

Version 1.0

**CENTER FOR THE STUDY OF WIRELESS
ELECTROMAGNETIC COMPATIBILITY**

**SCHOOL OF INDUSTRIAL ENGINEERING
UNIVERSITY OF OKLAHOMA**

July 5, 1995

INTRODUCTION

This protocol has been developed in support of a study on the interaction between various types of wireless telephones and hearing aids to be conducted at the University of Oklahoma. The overall purpose of the study is to objectively and subjectively evaluate the interference between wireless phone technology and hearing aids.

The Phase I objectives of the study are to:

1. define the test protocol for physical measurement of the interference generated in hearing aids by wireless phone signals of varying types. The resulting protocol shall produce repeatable results and include parameters such as field strength, threshold distance of interference, and intensity and frequency of the resulting audio interference output;
2. define a standard methodology for measuring the immunity of hearing aids, including standards for acceptable "noise floors"; and
3. define the test protocol for subjective measurement of the extent of the interference generated in hearing aids by wireless phone signals of varying types. The protocol shall include the use of both hearing-impaired and unimpaired individuals.

Background

This protocol is based on input from the references listed at the end of this document and from members of the Hearing Aid-Cellular Phone Interaction Study Design Group. Much of the protocol is based on a study conducted by the National Acoustic Laboratories, a division of the Australian Hearing Services (Le Strange, Byrne, Joyner, and Symons, 1995).

European and Australian clinical and laboratory studies have demonstrated that audible interference ("buzzing") can be produced in hearing aids by hand-held wireless phones operated in close proximity (a few centimeters to several meters). This effect has been demonstrated in the US but little has been published in terms of research results.

This protocol encompasses both physical measurement of hearing aid interference (objective testing) and how this interference is perceived by hearing aid users (subjective testing). The model outlined by Bowen (1995) identifies one possible breakpoint that connects the objective and subjective testing. Physical testing involves the RF source, RF path, and the hearing aid (objective). Output from the hearing aid is acoustically coupled to the user who

develops a perception of the interference signal (subjective).
Objective and subjective tests can be independent.

PROTOCOL FOR THE STUDY OF HEARING AID INTERACTION WITH WIRELESS PHONES

CURRENT RESEARCH

Currently reported studies in Europe and Australia have examined the interference generated by GSM phones, the predominant wireless phone technology outside of the US. GSM uses a Time Division Multiple Access (TDMA) signal structure as do most digital wireless phones in the US. The TDMA principle results in the carrier being pulsed in a fashion that allows audio frequency devices (hearing aids, portable stereos, etc.) to demodulate the radio frequency (RF) envelope and produce a constant, distinctive buzzing sound.

According to reports, these TDMA signals interfere with hearing aids from as far as 30 meters depending on the hearing aid model. At a range of 3 to 5 meters, hearing aid users may experience a 200 Hz humming noise overpowering all other signals. This is a particular problem for hearing aid wearers who wish to use wireless phones. The degree of interference immunity varies widely by hearing aid type with in-the-ear (ITE) devices typically having higher immunity. The level of interference is also affected by the relative orientation of the hearing aid and the phone.

Physical Measurements

Quantification of the sensitivity of a particular hearing aid (HA) to wireless phone interference is the first step in the ultimate development of immunity standards. Physical testing of HA immunity requires an RF signal source for generation and propagation of the appropriate cell phone signal, a controlled RF environment, a means for mounting and orienting the HA, and instrumentation for measuring the level of the audio interference output.

RF Test Signal

Previous researchers have employed various RF test signals to represent the GSM RF signal, including:

1. a 900 MHz pulse modulated carrier with a modulation frequency of 217 Hz, a duty cycle of 1:8 and 100% modulation (EHIMA, 1993; Joyner et al., 1993; National Telecom Agency of Denmark, 1994), and
2. a 900 MHz carrier, 80% modulated by a 1000 Hz sine wave (IEC, 1994; Le Strange et al., 1995).

No reports have been located in which the physical measurement testing was conducted using actual wireless phones. Some subjective testing has been reported with actual phones (Le Strange et al., 1995).

RF Environment

Previous researchers have employed or compared various RF test environments, including:

1. a radio anechoic room (EHIMA, 1993; IEC, 1994; Le Strange et al., 1995),
2. "stripline" consisting of a ground plane, stripline conductor, and 50 ohm resistive matching network (EHIMA, 1993), and
3. a waveguide (Joyner et al., 1993; Le Strange et al., 1995).

RF field intensities have either been fixed at 10 V/m or varied up to 200 V/m.

Mounting and Orienting the Hearing Aid

The hearing aid must be positioned in the RF test field away from objects that could distort the field and in such a way that it can be manipulated for maximum interference. Previous protocols include:

1. place HA in chamber in "normal use" position, rotate (clockwise) in 90° steps in the horizontal plane, measure interference at maximum SPL (EHIMA, 1993; IEC, 1994; National Telecom Agency of Denmark, 1994),
2. use both horizontal and vertical polarization of the RF field (EHIMA, 1993),
3. gimbal style mounting device for positioning HA in the waveguide about three axes, rotate for maximum pickup (Le Strange et al., 1995), and
4. mount within the Kemar head (no reference found at present).

Measuring Hearing Aid Output

The output of the HA must be measured without introducing instrumentation that could distort the RF field. This has typically been accomplished by using small diameter (2 mm) plastic tubing with a length between 50 mm and 500 mm to distance the HA and the acoustic monitor (IEC, 1994). Specific examples include:

1. ear simulator (IEC 711) to audio test station, amplifier, and DAT recorder via 500 mm tubing (EHIMA, 1993; National Telecom Agency of Denmark, 1994), and
2. standard 2 cc acoustic coupler to measuring microphone (B&K 4155) and measuring amplifier (B&K 2636) via 500 mm length of 2 mm Tygon® tubing (Le Strange et al., 1995).

Subjective (Psycho-acoustic) Measurements

Subjective evaluation of wireless phone interference is important since the detectability and annoyance of the interference depend on the individual hearing acuity of each HA user. Detectability and

annoyance levels should be determined for hearing-impaired people with hearing losses appropriate to each type of HA. Persons with normal hearing should also be included to represent worst case situations of detectability and annoyance. Detectability can be determined through the application of standard psychophysical techniques such as the method of limits or method of constant stimuli. The degree of annoyance is typically ascertained through the use of subjective scaling techniques.

Interference Source

Subjects may be presented with either actual or recorded interference signals. Specific examples include:

1. recorded interference signal together with pink noise, "party sounds", or connected speech (EHIMA, 1993; National Telecom Agency of Denmark, 1994), and
2. actual phone with call placed to pre-recorded message (Le Strange et al., 1995).

Detectability

Interference can be recorded on DAT or generated directly with actual phones for evaluation of detectability. Any of the following schemes can be used:

1. samples of various levels of recorded interference can be replayed in random sequence at random intensity levels while subjects are asked to respond as to the presence or absence of interference,
2. subjects wearing hearing aids are tested by moving an actual phone across a number of test sites from far (4 m) to near and back while the subject indicates the presence or absence of a "buzz" (Le Strange et al., 1995), and
3. subjects can listen to actual hearing aid output through tubing at various locations (e.g., close to phone as in listening to a call, one meter, and up to several meters). The acoustic level of interference is classified as: "not perceptible", "just perceptible", "moderately perceptible", and "annoyingly perceptible" (Le Strange et al., 1995).

Annoyance/Usability

The interference signal is presented at random intensity levels and/or varying distances while subjects are asked to respond with the corresponding level of annoyance. Examples of the scales used include:

1. "not annoying", "slightly annoying", "annoying", and "very annoying" (EHIMA, 1993), and
2. "usable", "sometimes usable", and "unusable" (Le Strange et al., 1995).

Experimental Variables

The experimental variables in the study consist of the independent variables which are manipulated, dependent variables which are measured, and control variables. The control variables are defined by the test environment ("test bed"), test apparatus and experimental procedure. The dependent variables include the physical measurements and characteristics of the interference levels and immunity "scores", and the subjective responses for detectability and annoyance. The independent variables represent those factors which are tested to determine their influence on the dependent measures (both objective and subjective). Potential factors in this study are presented in outline form in the following section labeled Experimental Design.

EXPERIMENTAL DESIGN

FACTORS AND LEVELS

Hearing Aids

Hearing aid types

Behind the ear (BTE)

In the ear (ITE)

In the canal (ITC)

Cochlear implant (CIC)

(ITE, ITC and CIC comprise 80% of market)

New devices vs. current patients

Specific manufacturers, models, units/model (too many?)

Phones

Phone technology (in priority order)

Analog

TDMA @ 800 MHz and 1900 MHz

MIRS (IDEN)

CDMA

GSM @ 900 MHz and 1800 MHz

digital cordless? (900 MHz)

Participating Manufacturers

Test Procedure Variables

Distance between phone/simulator and HA

Side of head

Ipsilateral (same side) vs. contralateral (opposite side) use

(important because of Class I vs. Class II standards)

Phone use by others vs. phone use by HA wearer

Relative orientation

Antenna position

Angle of coupling

REFERENCES

EHIMA (October 1993). *EHIMA GSM Project Development Phase*, Project Report (Revision A). Wemmel, Belgium: European Hearing Instrument Manufacturers Association.

ETSI (February 1993). *GSM EMC Considerations*, ETSI Technical Report GSM 05.90 Version 4.0.0. Valbonne Cedex, France: European Telecommunications Standards Institute.

IEC (May 1994). *First IEC/CD 118-XX - Hearing aids. Part XX: Electromagnetic compatibility for hearing aids - Immunity to radio frequency fields.*

Joyner, K.H., Wood, M., Burwood, E., Allison, D., and Le Strange, R. (March 1993). *Interference to Hearing Aids by the New Digital Mobile Telephone System, Global System for Mobile Communications Standard.* Sydney, Australia: National Acoustic Laboratories, Australian Hearing Services.

Le Strange, J.R., Byrne, D., Joyner, K.H., and Symons, G.L. (May 1995). *Interference to Hearing Aids by the Digital Mobile Telephone System, Global System for Mobile Communications (GSM)*, NAL Report No. 131. Chatswood, New South Wales, Australia: National Acoustic Laboratories, Australian Hearing Services.

National Telecom Agency of Denmark (June 1994). *Interference with hearing aids caused by GSM digital cellular telephones and DECT digital cordless telephones.* Denmark: National Telecom Agency.

Short, J. (1992). EMC considerations for digital cellular radio and hearing aids. (journal?) Ipswich, England: BT Laboratories.

**CENTER FOR THE STUDY OF WIRELESS ELECTROMAGNETIC
COMPATIBILITY
HEARING AID PROJECT**

HEARING AID DESIGN GROUP

Horst Arndt
Union Industries
20 Beasley Drive
P.O. Box 9017
Kitchener, Ontario, CN N2G 4J3
P: 519/895-0100
F: 519/895-0108

John Breaux
CTIA
1250 Connecticut Avenue
Suite 200
Washington, DC 20036
P: 202/736-2992
F: 202/785-0721

Adedeji Badiru
University of Okla., I.E.
202 West Boyd
Suite 124
Norman, OK 73019
P: 405/325-4359
F: 405/325-7555

Michael Buas
FCC
2000 M St., NW
Suite 230, MS 1300 D-2
Washington, DC 20554
P: 202/739-0719
F: 202/887-5637

Howard Bassen
FDA
12721 Twinbrook Parkway
Rockville, MD 20857
P: 301/443-3840
F: 301/

Jan Anders-Dalenstam
Ericcson Radio Systems
740 East Campbell, CMS40
Richardson, TX 75081
P: 214/
F: 214/952-8782

Nils Bojeryd
Ericcson Radio Systems
740 East Campbell, CMS40
Richardson, TX 75081
P: 214/705-8542
F: 214/705-8550

Robert Deward
Pacific Telesis
140 New Montgomery Street
Room 621
San Francisco, CA 94105
P: 415/542-3196
F: 415/777-4957

Donald Bowen
AT&T
67 Whippany Road
Room 15-H-225
Whippany, NJ 07981-0903
P: 201/386-7363
F: 201/386-7831

Ken Dormer
Hough Ear Institute
3400 Northwest 56th Street
Oklahoma City, OK 73112-4481
P: 405/947-6030
F: 405/947-6226

Page 2

Hank Grant
University of Okla., I.E.EMC
202 West Boyd
Suite 124
Norman, OK 73019
P: 405/325-3725
F: 405/325-7555

Don Heirman
AT&T Global Products
101 Crawfords Corner Road
Holmdel, NJ 07733-3030
P: 908/834-1803
F: 908/834-1807

Ken Joyner
Telecom
Australia
P:
F: 011-613-253-6365

Matti Kattilakoski
Nokia PCS Technology
2300 Valley View Lane
Suite 100
Irving, TX 75062
P: 214/257-9800
F: 214/257-9988

Kevin Kelley
Qualcomm, Inc.
1233 20th St., NW
Suite 202
Washington, DC 20036
P: 202/223-1720
F: 202/833-2161

Barry Kratz
Ericsson Radio Systems
740 East Campbell, CMS40
Richardson, TX 75081
P: 214/952-8619
F: 214/705-7666

Eber Lambert
Qualcomm, Inc.
6455 Lusk Blvd.
San Diego, CA 92121
P: 619/658-4008
F: 619/658-2120

Lars Larsson
Ericsson Corp.
1634 I St., NW
Suite 600
Washington, Dc 20006-4083
P: 202/783-2200
F: 202/783-2206

Bernie Liebler
HIMA
1200 G St., NW
Washington, DC 20005
P: 202/434-7230
F: 202/783-8750

Liz Maxfield
CTIA
1250 Connecticut Ave., NW
Suite 200
Washington, DC 20036
P: 202/785-0081
F: 404/785-0721

Page 3

Melvin Mumm
Peoples Cellular
P.O. Box 1206
Quitman, TX 75783
P: 903/763-2214
F: 903/878-2433

Douglas Neeley
Ericsson, Inc.
740 East Campbell Road
Richardson, TX 75081
P: 214/705-7668
F: 214/705-7666

Lars Nisson
Ericsson Radio Systems
740 East Campbell Road
Richardson, TX 75081
P: 214/705-7667
F: 214/705-7666

Dinesh Pal
Northern Telecom
2221 Lakeside Blvd.
Richardson TX 75083-3858
P: 214/684-4878
F: 214/684-3970

Mike Patrick
Pacific Bell Mobile Services
4420 Rosewood Drive
Building 2, 4th Floor
Pleasanton, CA 94588
P: 510/227-3015
F: 510/227-3079

David A. Pervis
Argosy Electronics
10300 West 70th Street
Eden Prairie, MN 55344
P: 612/942-9232
F: 612/942-8159

David Priniski
Motorola
600 North U.S. Highway 45
Libertyville, IL 60048
P: 708/523-2980
F: 708/523-6060

Shivakumar Ramen
University of Okla., I.E.
202 West Boyd
Suite 124
Norman, OK 73019
P: 405/325-3721
F: 405/325-7555

Ross Roeser
University of Texas at Dallas
Cellular Center
1966 Inwood Road
Dallas, TX 75235
P: 214/883-3001
F: 214/883-3022

Mike Sacha
Starkey Laboratories
6600 Washington Avenue, South
Eden Prairie, MN 55344
P: 612/828-6930
F: 612/828-6972

Page 4

Robert Schlegel
University of Okla., I.E.
202 West Boyd
Suite 124
Norman, OK 73019
P: 405/325-4342
F: 405/325-7555

Mairene Skopec
FDA
12721 Twinbrook Parkway
Rockville, MD 20857
P: 301/443-3840
F: 301/443-0023

Charles Spann
Northern Telecomm, Inc.
P.O. Box 833858
Richardson, TX 75083-3858
P: 214/684-1723
F: 214/686-3934

John Stupka
SBC Communications
175 East Houston
Suite 1305
San Antonio, TX 78205
P: 210/351-2800
F: 210/351-2029

Kok-Swang Tan
Health Canada
Research & Surveillance Division
Medical Devices Bureau, Health Protection
Branch
Ottawa, Ontario, CN K1A 1C1
P: 613/954-0380
F: 613/993-0281

Harry Teder
HIA
5400 Zumbra Drive
Excelsior, MN 55331
P: 612/474-5367
F: 612/943-1020

Julian Trinder
Siemens
Roke Manor Research
Rpmsey, United Kingdom
P: 44-1794-833354
F: 44-1794-833433

Christopher Wallace
Nokia
2300 Valley View Lane
Suite 100
Irving, TX 75062
P: 214/257-9800
F: 214/257-9988

Tom Wheeler
CTIA
1250 Connecticut Ave., NW
Suite 200
Washington, DC 20036
P: 202/331-8112
F: 202/785-0721

Jack Wojcik
Aprel Labs
51 Spectrum Way
Nepean, Ontario, CN K2R 1E6
P: 613/820-2730
F: 613/820-4161

EXHIBIT 5

Hearing Aid Telephone Interconnect System (HATIS™)

PHOENIX MANAGEMENT INC.

Fact Sheet

July

About HATIS™

Thirty million deaf Americans can now *hear* on the telephone! The HATIS™ system enables those with up to 99% hearing loss use the same communications devices that others take for granted. HATIS™ works directly with a doctor's prescribed hearing aid, because HATIS™ bypasses the telephone receiver. The hearing aid literally becomes the receiver, creating a volume and clarity that far exceeds any other product currently on the market.

A telephone switch (T-Switch) is all that HATIS™ requires of a hearing aid. This applies to behind and in the ear types of aids. Not only does HATIS™ allow total accessibility to communication avenues that have been previously denied to 11% of America, HATIS™ also serves as a major tool in speech therapy for the deaf.

Thousands of hearing disabled individuals who have used HATIS™ have made their first cellular or landline telephone call. The majority called and *listened* to their mothers for the very first time. HATIS™ applies to both the orally and manually deaf.

HATIS™ meets or exceeds the criteria and mandate requirements under all three federal acts on telecommunications: the Hearing Aid Compatibility Act of 1988, the Telecommunications for the Disabled Act of 1982 and the Americans with Disabilities Act of 1990. The system also meets the hearing accessible requirements for PCS and PCN systems as well.



About the Company

Phoenix Management, Inc. (PMI) was formed by Jo Waldron, who is 97% deaf and Shirley Crouch in 1987 to develop and market a device that enables the hearing impaired to use everyday telecommunication devices. HATIS™ was born of Jo Waldron's frustration and inability to use telephones and other hearing assistive devices. She, like 30 million others was relegated to using the slow and limited TDD/Relay System. PMI's role is now introducing the HATIS™ system to the deaf, the hearing impaired community and the telecommunications industry.

HATIS™ Applications

The possibilities are unlimited in scope. HATIS™ provides the key to the global information highway that is currently expanding every day. The system impacts places of employment, government offices and public access areas. It also works with stereos, radios and television. For the first time hearing disabled Americans will be able to use the same phones in hotels, airports, restaurants, hospitals, banks, home and everywhere else that the majority of us take for granted. The HATIS™ system allows Americans that have been ignored or denied the opportunity to participate in society equally.

Jo Waldron, 1987 Disabled American for the Nation and member of the President's Committee on the Employment of People with Disabilities states, "One simply cannot understand the value of telecommunication, unless you can't use it."

HATIS HISTORY

HATIS has been in the development stages for almost three years, and is now a reality. Alexander Graham Bell had a dream. He wanted to create a communication device for the deaf due to the fact his wife was deaf. And so the telephone was born. However, the telephone became a device for the hearing and for the most part, was and has been totally unusable for the deaf or hard of hearing.

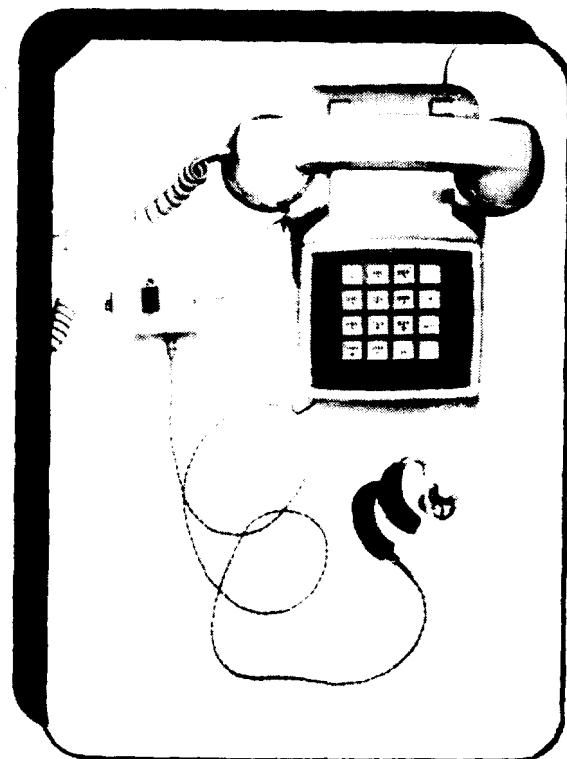
Jo Waldron, 1987 Disabled American for the Nation and member of the President's Committee on the Employment of People with Disabilities states, "One simply cannot understand the value of telecommunication, unless you can't use it." Out of frustration Jo Waldron, along with Shirley Crouch and Jim Potter, the inventor, designed and created HATIS. Waldron, who has a 97% hearing loss states, "The HATIS SYSTEM will redefine what freedom really means to millions of people like me."

Patent Pending
All Rights Reserved
Trademark

For more information contact your local dealer:

or write:

Phoenix Management, Inc.
5195 Fontaine Blvd.
Fountain, CO 80817
719-392-1442
Fax 719-392-0225



HATIS™
(Hearing Aid Telephone Interconnect System)

A REVOLUTIONARY NEW DEVICE
That Aids Those With
Hearing Loss

HATIS
Will enable the deaf/hard of hearing to utilize
Telephones, Cellular Phones, PCS
Systems and Pay Phones



THE HATIS SYSTEM works with any hearing aid that has a Telephone Switch (T-switch). This is for in the ear and behind the ear as well.



HATIS provides accessible telecommunication here in the United States and beyond for millions of hearing disabled who for the most part have been denied the convenience and in some cases the life saving benefits.

HOME	RETAIL STORES	ZOOS/MUSEUMS
OFFICE	BANKS	RECREATIONAL
SCHOOLS	PHARMACIES	FACILITIES
HOSPITALS	HEALTH CARE	EMERGENCY
DINING OUT	PROVIDERS	CALL CENTERS
RESTAURANTS	THEATERS	CONVENTION
AIRPORTS	LIBRARIES	CENTERS
	LEGAL OFFICES	DAY CARE
	ETC.	CENTERS
		GAS STATIONS
		INSURANCE FIRMS
		ETC.

THE HATIS SYSTEM can be retrofitted with the Hatis receptacle on home or office phones, and pay phones for accessibility under the Federal Acts on Telecommunications.

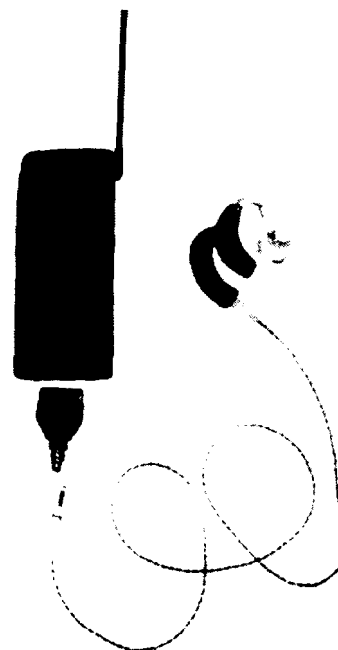


HATIS IS STATIONARY OR COMPLETELY MOBILE and

Will redefine the business/employment environment as it will allow ADA (Americans with Disabilities ACT) compliance in regards to all public facilities, services, benefits and job accommodations and promotions.

The HATIS System will help meet the ADA requirements in a most economical manner and will permit people with hearing disabilities to communicate whenever and wherever they so desire.

HATIS, a product designed by the deaf for the deaf is registered by FCC # and is Patent Pending.



FCC Registration # 2T3USA-75630-KX-N.

HATIS SYSTEMS currently work with most stereos, cassette players, video game systems, computers, televisions and even more will be available in the future!

EXHIBIT 6

The Honorable Reed E. Hundt
Chairman Federal Communications Commission
1919 M Street, NW, Room 314
Washington, DC 20554
USA

Corporate R&D

26. March 1995

OML

Subject: Global System for Mobile communications (GSM) as an operating
Standard for PCS in the United States of America.

Dear Mr. Chairman:

During the last few weeks, letters and reports regarding the public health and safety of GSM in the United States of America have been circulated between you, United States Senators, Senate Committees and Subcommittees, and Baker and Hostetler prompted in part by misinterpreted and unauthorized comments attributed to me in a report issued by Wireless Communications Council entitled: "The GSM Operating Standard for Personal Communications: A Threat to Hearing Aids and Other Consumer and Medical Electronic Devices". I am writing to you to clarify the situation on electromagnetic compatibility (EMC) between GSM, hearing aids, and other electronic and electrical equipment.

As director of Telelaboratoriet for Telecom Denmark, let me first of all clearly state that GSM telephones, hearing aids, and all other electronic and electrical equipment which meet the European Union EMC directive, 89/336/EEC, can operate simultaneously without interference from each other. This means that hearing aid users can successfully and comfortably use a 2 watt, handheld GSM telephone in conjunction with a hearing aided ear without interference. The only interference my laboratory has ever reported has been between old, inferior quality hearing aids located within three feet or less of a handheld GSM telephone operating at it's maximum power level of 2 watts. In the existing population of hearing aids, one third had the immunity to be used with a GSM telephone, the rest had such good immunity that the probability for disturbances from other users of GSM telephones was found to be negligible.

In my little country of Denmark, over 250.000 people (4.8 % of the population) are currently using GSM telephones on two competitive, nation-wide networks and not one single complaint has been received by the Danish Telecom Inspector from

50329tel.alm

□ **Headquarter:**
København 10
8888 Arhus C
Denmark
Tel.: + 45 89 33 77 77
Fax: + 45 89 33 61 33

□ **Lyngby A&S 2**
2970 Hørsholm
Denmark
Tel.: + 45 45 78 64 44
Fax: + 45 45 78 99 83

Tele Denmark A/S
Arhus
Company Reg. No. 183.447
Telex 64444 tel dk

Corporate R&D

26. March 1995

OML

hearing aid users, car owners, hospitals, airports, medical equipment suppliers, consumer protection agencies, etc.. I also wish to advise you that it is considered inaccurate for Wireless Communications Council to single out GSM as a potential interferer, as all analogue and digital radiotransmission standards can influence the function of electronic devices including, but not limited to AM, FM, AMPS, CDMA & D-AMPS. It must also be recognized that many digital radio transmitting systems, including D-AMPS, utilize the exact same radio access method as GSM, Time Division Multiple Access (TDMA).

As I have a background not only as a scientific telecommunications research expert, but also as a development manager for the hearing aid industry, I am consistently advising both industries in the development of new modulation technologies and EMC compatibility test methods. A complete copy of my research can be obtained upon request at facsimile number + 45 45 76 99 83.

With copy of letter to:
The Honorable Senator Trent Lott
The Honorable Senator Bob Packwood
Baker & Hostetler, Mr. Guy Vander Jagt

Sincerely,



Ole Mark Lauridsen
Corporate Director R&D
Professor, MSc. E.E.

5002861.eko

□ Headquarter:
Kornthegade 18
8000 Århus C
Denmark
Tel.: + 45 88 33 77 77
Fax: + 45 88 33 81 33

□ Lyngsø Allé 2
2870 Herlev
Denmark
Tel.: + 45 45 76 64 44
Fax: + 45 45 76 99 83

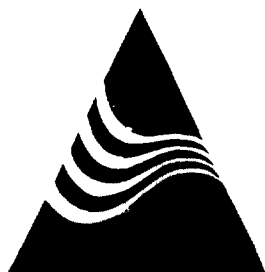
Tele Danmark A/S
Århus
Company Reg. No. 183.447
Telex 64444 ldk dk

EXHIBIT 7

**Interference to Hearing Aids
by the
Digital Mobile Telephone System,
Global System for Mobile
Communications,
(GSM)**

NAL Report No. 131

May, 1995



NATIONAL ACOUSTIC LABORATORIES

**Interference to Hearing Aids
by the
Digital Mobile Telephone System,
Global System for Mobile
Communications,
(GSM)**

J. Ross Le Strange
Eric Burwood
Engineering Section

Denis Byrne
Research Division
National Acoustic Laboratories

Ken H. Joyner
Mike Wood
Electromagnetic Compatibility Section
Telecom Research Laboratories

Grant L. Symons
Mobile Standards Section
AUSTEL



NATIONAL ACOUSTIC LABORATORIES

NAL Report No. 131

May, 1995

© Australian Hearing Services 1995

ISBN 0 642 22723 3

ISSN 0812-8677

First Published 1995

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without written permission from the General Manager, Australian Hearing Services, 126 Greville Street, Chatswood, NSW, 2067.

The National Acoustic Laboratories is a division of Australian Hearing Services, a Commonwealth Government Authority.